1919

History of Base Hospital 21

B A S E H O S P I T A L N O. 21

1. HISTORY OF BASE HOSPITAL NO.21

BY

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Early Days.

Base Hospital #21 was organized in July 1916 as a Red Cross Unit from the Staff of the Washington University School of Medicine, St. Louis, Mo. Fred T. Murphy, Professor of Surgery, was appointed Director of the Unit. During the winter and spring of 1916-17 a complete hospital equipment was purchased through the generosity of friends of the unit and school, the medical staff was organized, and a group of Red Cross nurses was enrolled. Courses for "Nurses' Aids" were given throughout the year in the wards of the Barnes Hospital.

On April 27, 1917 word was received from Washington to prepare to mobilize for foreign service. Final preparations for active service were made, physical examinations given and the enrollment of the enlisted personnel completed. On May 12th, Major (Col.) J.D. Fife of the Medical Corps of the Regular Army reported for duty and took command, and Capt. (Major) G. H. Kopple of the Quartermaster Corps was assigned to the Unit. On May 17th the Unit left for New York, after a farewell service the previous day at Christ Church Cathedral, and sailed at noon of the nineteenth of May on the S. S. St. Paul.

At the time of sailing the Unit consisted of 28 officers, 65 nurses, and 185 men of the Medical Reserve Corps. The original personnel of the Red Cross Unit when ordered into active service was as follows:

Fred T. Murphy.....Director
Nathaniel Allison.....Adjutant and Orthopedic Surgeon.
Borden S. Veeder.....Quartermaster and Supply Officer.
Meredith R. Johnston.....Registar.
Malvern B. Clopton.....Chief of Surgical Service.
Walter Fischel.....Chief of Medical Service.
Eugene Opie.....Chief of Laboratory Service.
Sidney I. Schwab.....Neurologist.
Lawrence T. Post.....Ophthalmologist.
Edwin C. Ernst.....Roentgenologist.
Arthur W. Proetz.....Ear, Nose & Throat.
Warren R. Rainey.....Surgical Service.
Roland F. Fisher.....Surgical Service.
Fred B. Abbott.....Surgical Service.
Philip P. Green.....Surgical Service.
Levi F. Fuson.....Surgical Service.
Allen M. Chesney.....Medical Service.
Charles E. Kyerman.....Medical Service.
Hugh McCulloch.....Medical Service.
Allen A. Gilbert.....Medical Service.
Joseph Larrimore.....Medical Service.
Howard T. Bell.....Laboratory Service.
James A. Brown.....Dental Surgeon.
Fred J. Brockman.....Dental Surgeon.
Dean Carrol T. Davis.....Chaplain.
Miss Julia Stimson.....Chief of Nurses.

The Unit, sailing together with Base Hospital #10 from Philadelphia and a group of Orthopedic Surgeons, formed part of the first thousand troops sent overseas. After an uneventful voyage the unit landed in Liverpool on May 28th. It was here learned that the Unit was to take over No. 12 General Hospital of the British Expeditionary Force in France. For ten days the Unit was the guest of the British Government in England. The men together with a few officers were sent to Blackpool, the training center of the R. A. M. C., where the English training methods were observed and hospitals, gas schools, etc. visited. While at Blackpool the Unit was inspected by Sir. Alfred Keough, Director General of the British Medical Service. The remainder of the officers and the nurses were taken to London and given a round of receptions, teas, and theatres. On the 10th the two parts came together at Southampton and crossed the channel the same night, reaching La Havre on

Sunday morning, June 10th. The nurses proceeded immediately to Rouen, while the officers and men waited at Havre until the following night and after experiencing their first ride in a French troop train, reached Rouen on Tuesday morning, June 12th.

The Hospital.

No. 12 General Hospital at Rouen (subsequently officially designated in the B. E. F. as "#12 (St. Louis, U.S.A.) General Hospital B. E. F.") was one of the earliest British Hospitals established in France and had been situated on the race track (Champs des Courses) at Rouen since August 1914, excepting for a brief period in 1914 when the oncoming German army had forced the hospital to evacuate down the river Seine on barges for purposes of safety. It was one of fourteen hospitals and convalescent camps with a total of approximately 25,000 beds maintained by the B. E. F. in Rouen area. Rouen was the chief center of the "Southern Line" of British hospitals in France, receiving chiefly from the Somme area, and evacuating patients to the United Kingdom either by hospital boats coming up the Seine directly to Rouen, or by train to La Havre and thence by boat to England. Not only was Rouen a hospital center but also a large replacement depot and one of the chief base supply centers for the British Expeditionary Forces and the French Army. Later it became an American supply base in addition. Three of the fourteen hospitals; #1 Australian, #10 General and #12 General, were located on the race track about two miles from the center of the city and the railway station. The camp site was ideal, the ground being sandy with gravel affording excellent drainage, which was quite important as the Seine valley has a very large rainfall, and the water supply was abundant.

#12, the largest of the three hospitals with a capacity of 1,500 beds, occupied one end of the course and utilized the permanent buildings as pavilions, paddocks, cafe, etc. Thus the hospital office was located in the office of the course, the laboratory in the "Post de Police", the office of the Commanding Officer in a 'Vestaire' under a pavilion, the officers' mess in the 'salon'. The officers were quartered in small bell tents behind one of the pavilions and the nurses in wooden huts erected in the paddock. The two other hospitals in their entirety and the accommodations for patients were within the enclosure made by the track. The track itself - turf - was unoccupied by buildings until after our arrival and formed with a surrounding line of oaks not only a picturesque setting for the hospital but also an excellent playground for tennis, cricket and ball, as well as a parade and drill ground. The ground between the tents and huts was laid out in lawns and flowers and every effort was made, as in all British Military Hospitals, to have the surroundings as pleasant and attractive as possible.

At the time the hospital was taken over by the American Unit it was almost entirely a tent hospital. Two huts of about 30 beds each and a small ward of 10 beds attached to the operating room were the only accommodations not under canvas. Part of the storage and supply space was in huts and the rest under canvas. There was an attempt to divide the tent lines into a medical and a surgical side, which was maintained in a loose way. Not infrequently, however, and particularly so as the number of cases handled increased, large portions of the so-called medical lines were used for wounded and vice versa when necessity demanded, as at the time of the influenza epidemic. Adaptability was a prime requisite - not only of physical equipment but of personnel - as experience proved. In the winter and spring of 1917-18 nine wooden barracks

of the Adrian type holding about 40 [illegible]

huts holding from 20 to 25 patients each. Later plans were approved for replacing tents with 23 Nission huts. But eight of these were completed by the time of the armistice when all work was discontinued. During our occupancy the kitchen and disinfector shed were rebuilt, a large bath house erected, four barracks for enlisted personnel built (on the race track itself), the tents for officers repladed by huts, and additional huts for the nursing staff erected.

Medical Personnel.

On taking over #12 General the British Commanding Officer, Lt.Col. James Jameson, R. A. M. C., remained in command until July 10th, when Maj. Fife assumed command. Two British officers were left with the Unit and remained throughout, one serving as liason officer and registrar, the other as quartermaster. The American Commanding Officer was, however, in command of the British Hospital and was to all intents and purposes a British Commanding Officer and was regarded as such by the British Military authorities. Col. Fife remained with the Unit until October 18th when he was ordered to the office of the Chief Surgeon. He was succeeded in command by Major [Col.]Murphy, who had been director of the medical work and serving on a surgical team. Major Murphy remained with the Unit until May 15th, 1918, when he in turn was transferred to the A.E.F. and later became head of the Medical and Surgical service of the Red Cross. Major (Lt.Col.) Borden S. Veeder was placed in command of the Unit on Col. Murphy's departure and remained in charge until the Unit was demobilized at Camp Funston on May 3rd, 1919.

Throughout the entire mobilization of the hospital, Major (Lt.Col.) Walter Fischel remained at the head of the Medical Service. Major (Lt.Col.) Clopton served as chief of the Surgical Service until July 1st, 1918 when he left the Unit to organize and take command of Mobile Hospital #4.

He was succeeded by Major Rainey. Capt. (Col.) [illegible] was the first of the original Unit to leave, being called to the A.E.F. as Consultant in Orthopedic Surgery in September 1917. In January 1918, Capt. (Col.) Opie was transferred to the Commission for the Study of Trench Fever and later to America for the study of pneumonia. He was succeeded in charge of the laboratory by Capt. W. S. Thomas. In March Capt. (Lt.Col.) Sidney I Schwab was made Medical Director of Base Hospital 117, the special hospital organized for the treatment of war neuroses cases. Capt. (Major) Allen M. Chesney left the Unit in April 1918 to take up special work in the laboratory service and later became Epidemiologist to the Third Army. In April 1918 Miss Stimson left to become the head of the Red Cross Nursing Service and later Chief Nurse of the Expeditionary Forces. Miss Maude Taylor, who had been her assistant, succeeded her as chief nurse of #21 and Miss Estelle Claiborn, became Assistant Chief Nurse. Capt.(Major) Ernst remained throughout as Roentgenologist and Lt. (Major) Brown as Chief of the Dental Service.

As soon as the Unit was assigned to #12 General it became evident that the enlisted personnel and nursing staff was insufficient. The British left a number of V.A.D's. and enlisted R.A.M.C. with the Unit until a group of reinforcements consisting of nine officers - Capts. W. H. Thomas, H. McClure Young, Raymond B. Spivy, and Lieuts. E. P. Lehman, W. H. Horst, J. E. Stewart, Carl Eberbach, W. H. Olmstead, and T. A. Slaughter, together with 29 nurses and 47 enlisted men recruited in St. Louis joined the Unit in November 1917. Some of these officers were used to replace losses in the strength of the Staff and others were assigned to special duties with the B.E.F. or A.E.F. In the original outfit of enlisted men were included a group of fourth year medical students from the Medical School of Washington University. Instruction was given

them throughout the winter of 1917-18 by the Staff and in March 1918 they were graduated from the medical school. After a course at the Sanitary Training School they were commissioned in the Medical Corps and assigned to duty with Base Hospital #21. Thus almost all replacements for the many losses from the original staff were made from physicians directly connected with the Medical School.

In addition to the changes in the staff enumerated above, Lt. (Capt.) Larrimore was transferred in August 1918 to #6 Red Cross Hospital in Paris for special work. Captain Meredith Johnston and Lt. (Capt.) P. P. Green entered the regular service of the army and were assigned to the A.E.F. Capt. Johnston later rejoined Mobile Hospital #4 and Base Hospital #21 as Adjutant, while Lt. Green was wounded and sent home. Lt. (Capt.) Fred B. Abbott was transferred to the orthopedic service of the A.E.F. and later, after being gassed, was invalided home. After armistice Capt. Thomas and Capt. (Major) Bell were transferred to the A.E.F. to take charge of Hospital Center laboratories.

Mobile Hospital #4.

In July 1918 the hospital was asked to become the parent organization of Mobile Hospital #4. Five officers under Lt. Col. Clopton, (Capt. Post, and Lts. Abbott, Eberbach, and Lueking) together with 20 nurses, under Miss Ruth Norton, and 30 of the enlisted personnel were selected for this duty. The Unit served at the St. Mihiel and in the Argonne and after armistice was demobilized and the original group returned to Base Hospital #21.

Surgical Teams.

Soon after our taking over an opportunity was afforded for advance surgical work by the formation of surgical teams for work at

at Casualty Clearing Stations. Teams consisted of a surgeon, anesthetist, nurse assistant, and orderly. In this way Col. Murphy, Lt.Cols. Clopton and Veeder, Majors Rainey and Post, and Capt. Fisher served with advanced British units in the Flanders offensive in the fall of 1917. Lt. Col. Fischel, Capt. Gilbert, and Lt. Olmstead were later assigned to temporary duty at Casualty Clearing Stations for advanced medical work. This system of teams which was adopted by the medical service of the A.E.F. was one of the mainstays of the service and gave the hospital surgeons a broad view point which otherwise could not have been obtained. It was of particular value to Base Hospital #21, as in the spring and fall campaigns of 1918 the surgical work at Rouen became in many respects similar to that at the Evacuation Hospitals, and the presence on the Staff of a number of men accustomed to the scheme and mode of working at the advance hospitals was of great value.

From time to time additions were made to the nursing staff and enlisted personnel. One of the principal additions were the nurses and men from "Hospital Unit D" who were sent as reinforcements in April 1918 and remained until August. At another time some 40 men from a Canadian Hospital were attached. Throughout the entire service from 20 to 30 "base duty" men of the British army were attached to the American personnel. Except for one period, after armistice, when some 75 men from Mobile Hospital #4 were attached, the enlisted personnel was always below a desirable strength. At times it was necessary to impress convalescent patients, venereal patients, etc. to carry on the routine work of the hospital.

	Admissions			Deaths.	
	Sick	Wounded	Total	Sick	Wounded
1917					
Remaining	418	354	772		
June	519	178	697		2
July	1352	575	1927		3
August	1587	1370	2957	3	11
September	866	843	1709		4
October	1316	1507	2823		21
November	1328	1256	2584	1	21
December	1560	836	2396	1	21
1918					
January	1906	345	2251	5	9
February	958	140	1098	2	5
March	1736	3347	5083	4	28
April	1767	1675	3442	2	91
May	2301	1148	3449	4	47
June	2110	1377	3487		18
July	1888	1536	3424	5	14
August	1589	3954	5543	1	66
September	1697	4803	6500	2	93
October	2146	3703	5849	27	101
November	2710	685	3395	64	42
December	2083	74	2157	9	4
Totals	31837	29706	61543	130	601

Table showing Admissions and Deaths by Months.

Unit I Table

Resume of Work

As noted above, the Unit began its independent career early in July 1917. The last convoy of patients was admitted on Dec. 31, 1918. Thus over 18 months of actual work was spent in Rouen during which time 61,545 patients were admitted and discharged. The general character of the work from a chronological standpoint is graphically shown in Chart 1, which gives the total admissions by services and by months. Of the total admissions 2,833 were Americans and the remainder British (Imperial and Overseas troops). The Americans were local admissions from Rouen area, troops from the ten divisions which trained with the British in the spring of 1918, and chiefly wounded from the II. Army Corps (27th and 30th Divisions) who were attached to the British 4th Army when the Hindenburg line was broken in October 1918. One of the interesting features was the increasing amount of work performed by the hospital. Thus if six month periods are taken; during the first six months there were approximately 14,000 admissions, during the second 19,000, and 27,000 during the third. As the curve of the chart shows, the work was fairly light during the summer of 1917 which gave the Unit ample time for adjustment to war conditions. October 1917 was marked by a rise in the admissions and operations from the Flanders offensive, which culminated in the attack on Paschendale Ridge. The larger part of the wounded from Flanders were evacuated through the 'Northern line'; hence there was no such increase as occurred a year later when the fighting was chiefly in the Somme area at the southern end of the part of the line held by the British forces. During the winter the wounded were few, but the increase of medical cases kept the hospital fairly well filled. The records show the number of cases of 'trench feet' and 'trench nephritis' to have been much less than during

the winter of 1916-17.

The sudden sharp rise in the curve of admissions in March 1918 is coincident with the German drive toward Amiens. For a period of five or six days a tremendous strain was thrown on the hospital. One day the 'daily stats' showed 1950 patients in the hospital although the capacity was but 1350. This day there was a "turn over" (admissions and discharges) of over 930 cases, a figure exceeded but once (October 1918) in the history of the hospital. The grand stands, recreation huts, etc. were pressed into service at this time. As a number of Casualty Clearing Stations as well as many field ambulances were lost at this time, many of the wounded were admitted directly from the field with their first aid dressings. From this time on the curve of admissions remains high. During July a number of American soldiers as well as many British from the Marne battle were admitted.

The high sustained curve during August, September, and October represents the maximum effort and work of the hospital and unit. Hundreds of wounded were admitted during this time and when the hospital was not filled with wounded, cases of severe influenza were filling the medical lines and encroaching on the surgical. The necessity of immediate evacuation to provide beds for the freshly wounded was always present, hence the daily 'turn over' averaged about two hundred and fifty. During this period over 25,000 cases were admitted and the sustained effort only ended with the armistice. Following armistice on November 11th the hospital functioned until January 1919 for sick and repatriated prisoners of war.

On January 22, 1919 the last of the patients were transferred or discharged and the hospital started to demobilize. Stores were turned in, tents taken down and all hospital and medical equipment accounted for

to the British Government. The last of January the nursing staff was broken up, part going into Germany and part to Vannes Hospital Center for return to America. On February 11th the enlisted personnel and staff started for Vannes (Morbihian). After three nights and two days the Unit arrived to find that although Vannes was theoretically a concentration camp for American Hospital Units, Base Hospital #21 being the first arrival had to take over a hospital some 25 miles from Vannes itself; so the Unit was divided between the Grand Hotel at Carnac Plage on the Brittany Coast, and the Monestary at Pleuharnel some two miles distant. A group of convalescent officers and nurses at the former and soldiers at the latter were inherited from Base Hospital #202, which ceased to functionate.

The Return to America.

Several weeks were spent at Vannes awaiting orders, passing embarkation inspections in Base Section 1 (which were of no use at Base Section from which the Unit finally sailed) and incidentally clearing and preparing quarters for future units. On March 20th the officers and men left for Brest. Two weeks were spent at Camp Pontenezan and on April 7th the Unit sailed on the Graf Waldersee, an armistice ship on her first voyage carrying troops. The nurses remained at Carnac until the 8th and sailed the 12th of May. The Unit landed in New York on Easter Sunday, April 20th, and went to Camp Merritt from where one week later it left for Camp Funston. A stop enroute was made on April 30th in St. Louis for a parade, reception, and services at Christ Church Cathedral. The evening of the same day it entrained for Funston and on May 3rd, 1919 was demobilized - 23-1/2 months after mobilization, of which twenty-three months were spent in foreign service.

Hospital Administration.

In an earlier paragraph the changes in command have been noted. The peculiar situation of the hospital - that is, belonging at one time to both the American and British Expediontary forces gave rise to many unusual problems of administration. In a broad way the military side was handled according to American regulations - the technical according to British. Many times the two would more or less come into conflict, and then problems were settled on their merits with the view point of efficiency of service. Although located in Base Section #1 of the A.E.F. the Unit was only responsible to the Commanding General of the section for matters of discipline. Technically it was a British Hospital and hence under the administration of the D.D.M.S. of Rouen Area. When the American Medical Service and personnel was involved the Unit was directly responsible to the office of the Chief Surgeon of the A.E.F. Medical records were kept according to the British system and British forms used. For each American patient an additional set of American records were made. All medical and surgical supplies were obtained from the British except certain special X-ray and laboratory equipment which were obtained from the American Medical Service. Both the British and American Red Cross Societies rendered most valuable aid to the hospital. The hospital office was divided into two groups, the "American" and "British" - that is, one set of clerks handled medical records and British returns, the other American returns, payrolls, etc. The staff and personnel were paid by the American Government, while rations, fuel, etc. were obtained from the British. Two distinct quartermaster departments were maintained; one looking after the hospital supplies and British clothing; the other after the pay and the equipment of American soldiers and patients.

During 1918 the American quartermaster department of the hospital was enlarged and all American patients in British and French hospitals in the area were equipped and paid through #21. Further all disciplinary problems of American patients in British hospitals, and convalescent camps in Rouen area were placed under the Commanding Officer of the hospital.

Early in 1918 a hundred casual American nurses were sent to British hospitals in France and this number subsequently increased by two further units. Although they were scattered from Boulougne to Trouville they were placed under the Commanding Officer of Base Hospital #21 and all records, returns, and payrolls made through the hospital office. As there was no officer of the Medical Corps attached to Rouen Base Section, the hospital provided sanitary and medical service and maintained a prophylactic station in Rouen. In July 1917 enlisted men were stationed in Rouen as Military police and maintained there until replaced by the military police service. Capt. T. C. Austin, M.C., who crossed with the Unit as Adjutant, was transferred to Paris in the fall of 1917 as attending surgeon, and T. C. Hester, who had come over as Master Hospital Sergeant, was commissioned as First Lieutenant in the Sanitary Crops and became Adjutant and Company Commander. He was in charge of the hospital office until the Unit was transferred to Vannes when he was assigned to the Third Army and was succeeded by Capt. Johnston, who had been Adjutant of #4 Mobile Hospital.

As the Unit was maintained in the field "under the same conditions" as British troops the English messing arrangements were necessarily adopted. Five messes were maintained - hospital or patients, officers, nurses, non-commissioned officers, and privates. Rations for patients

were drawn as per the English system. A ration (British L.of C. ration) was furnished for every person on the strength, and this was supplemented by each group according to its taste and desires. Officers and nurses were allowed monetary equivalent in lieu of rations if they so desired, which was availed of in part by the nurses. Each mess maintained its own kitchens. The unsupplemented British ration was not entirely satisfactory to the Americans and in the case of the privates' mess gave considerable difficulty at times. Nor was the British hospital ration, although of satisfactory balance and quantity, entirely suited to American tastes. As a matter of fact, most of the difficulties which arose in management and administration were attributable to the question of food and rations.

General Comment.

In retrospect one feels that the result of this almost experimental mingling of the American units with the British forces was most satisfactory. The unusual situation led to the necessity for constant adjustments and readjustments. In these adjustments both the British and American services left the details for local settlement and the never-failing courtesy and thoughtfulness of the British officials made the administrative work most happy. To those who had the privilege of working with our Allies the personal gain was tremendous. In some ways it was regrettable that the needs of the British Medical Service were such that the original plan to transfer the Unit as a whole to the A.E.F. proper were never carried out until after armistice. However, through the various individuals who received their first training in #21 and through #4 Hospital, a large part of what we learned from our British Allies found its way toward the care of the sick and wounded American soldiers in France.

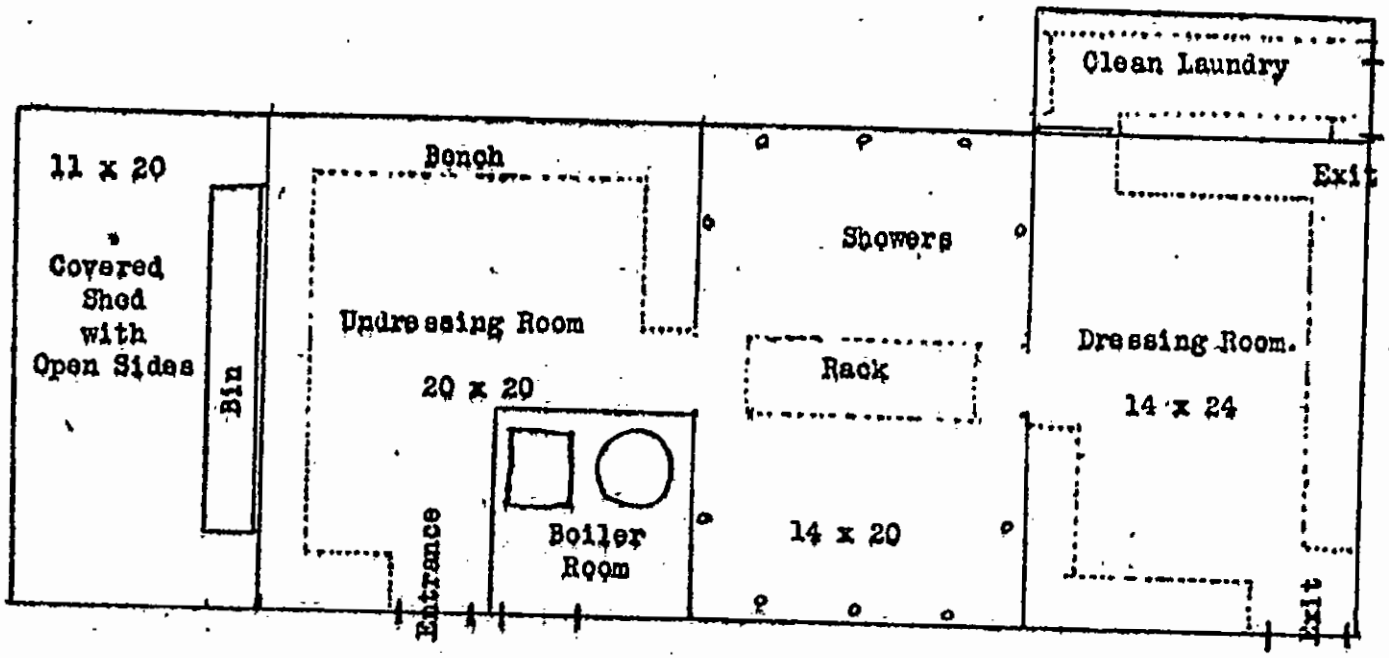
Sanitation.

The general sanitation of the camp was under the direct control of the Commanding Officer and the general supervision of the district sanitary officer. The points of interest were water, feces disposal, bathing, and vermin. The two latter points are so intimately associated that they can best be discussed under the general topic of the reception of patients.

Water: Water was obtained from the general Rouen supply which was pumped into large stand tanks at one corner of the race track from whence it was distributed to the three hospitals. The supply as a whole was abundant and the water was purified chemically in the tanks. There was, however, no running water in the tents or wards except the operating room.

At either end of the hospital there was a feces destructor with attached water backs and tanks. These together with several Sawyer stoves outside the central kitchen furnished sufficient hot water, while taps located at the same places supplied cold water. Water was carried to each ward or tent in buckets. This lack of running water in the wards was not nearly the handicap nor inconvenience which it at first appeared to be, and unquestionably thousands of gallons of water were saved.

Feces: There was no sewerage system, except for a water drain from the kitchen, bath house and destructors. The bucket system was in use and two of the ordinary type of brick feces destructors were sufficient to dispose of all hospital and personnel waste from the latrines. Crude cresol solution was kept in the buckets which were emptied twice daily, and oil used freely. Fly proof lids and covers were made by our carpenters. The method was entirely adequate and satisfactory. Soiled dressings,



GROUND PLAN BATH HOUSE.

Concrete floor with drains - G.I. sides & roof.

Plan II

In [illegible] disinfected and salvaged. Tagged clothing was sent to the pack store to be issued to the patient when he left the hospital. Dirty and blood-stained clothing was sent to a laundry after disinfection and from there to the area clothing depot where it was salvaged for reissue. Stretcher cases were taken directly to the wards from the reception hut and bathed by nurses and attendants between blankets, and the clothing and blankets sent to the disinfector. All blankets received with the patients were immediately disinfected, and clean blankets issued to the ambulances from a pile kept available for this purpose. Three blankets were provided for each stretcher. All disinfection and sterilization was done by two portable Thresh disinfectors which were kept in operation as a rule both night and day. They gave most satisfactory service. The newer British General Hospitals need permanent instead of the portable Thresh sterilizers.

Surgical Service.

(Lt.Col. Malvern B. Clopton)

The Surgical Service cared for 28,114 British and 1,592 American wounded. The Americans came in chiefly during September and October 1918, and represented 15.3 per cent of the surgical admissions during these months. At this time the American 2nd Corps was fighting with the British, and the wounded came down to the base on British hospital trains from the front, cared for in all respects like British cases.

The death rate of the wounded for the whole period of service was 2.01 per cent. An estimate of the American group shows the rate 1.76 per cent, which is slightly less than the rate for the British admissions during the same period.

The condition of the wounded arriving at the hospital from the

tin cans, etc. were burne[illegible] for water from baths, urinals, etc. were made by digging deep holes and filling them with the burned cans; the top being made of boards and earth and the center drain pipe made of old stove pipe leading to the bottom of the pit.

Vermin & Bathing: All walking patients were received in the same clothing which they had been wearing when taken sick or wounded. Only severe stretcher cases had a change of clothing at an advance stations or hospital. Consequently a large percentage were infected with vermin. All walking cases were hurriedly looked over by a senior medical officer at the reception hut as soon as they were unloaded from the ambulances, and unless obviously unfit were sent at once - day or night - to the bath house. As the bathing accommodations were at first inadequate a new bath house was erected according to a plan worked out at the hospital. Patients were admitted to an undressing room (see diagram) at one end where small personal belongings as money, pay book, etc., were put into a small cloth bag. Articles of outer clothing in good condition were tagged with the owner's name, number, and the ward assignment, received previously in the reception hut. All clothing was then put through an opening into a bin which opened outside. The patients then passed into the bath with their bags and shoes, which were placed on a central rack, and bathed under one of the ten showers. After the bath they continued through into a dressing room where a towel and suit of hospital clothing and underclothing were issued. They were then sent to the wards. The hospital suit was of heavy blue washable material and was worn by all hospital patients. Any wet dressing was temporarily replaced by an attendant. In this way patients could be bathed at the rate of about 100 per hour. The capacity of the hot water tank was only sufficient to hold water for 100 showers, after which it was necessary to wait an hour for more water to heat.

front va[illegible]riods of relative calm or of small local actions the wounded had been cared for at the Casualty Clearing Stations and had been held after operation until the condition of the wound indicated it was safe to make the railroad journey. On reaching the base the stay of the severely wounded was usually short, unless the gravity of the wound precluded the early transfer to England; the policy of the British Army being to remove to England all cases which would not be ready to return to duty within a few weeks.

During the periods of stress, when a vigorous offensive was being carried out, the Casulaty Clearing Stations were able to operate and care for a relatively small proportion of the wounded, only attempting interference in the severe thoracic, abdominal, or critical cases. This left most of the wounded without any care except dressing and splinting, and the necessary operations were delayed until the base hospitals were reached. At such times, particularly during the Paschendale fighting in 1917, during the German offensive on the Somme in March 1918, and the great Allied offensive beginning in August 1918, the base hospitals in the Rouen area were pushed to the limit caring for and operating on the wounded, who were often received in critical condition because of the long carry and consequent fatigue together with the risk of advancing infection. These same cases had to be held and cared for after operation as it was impracticable to evacuate at the early stage customary in Casualty Clearing Stations.

An attempt was made to group cases. Chest cases were kept until all risk of sepsis had passed, both those operated in the forward areas and those at the base. The major part of the chest operations at

the ba[illegible] removal of large foreign bodies. Aspiration of chest was routine. Approximately eight hundred (800) chest cases passed through the hospital, with a mortality of 4 per cent, which is relatively low considering the large number of these cases that came down unoperated during the periods of stress.

The abdominal cases were practically all operated before admission, and were evacuated as soon as the condition of the abdominal wound justified. Relatively few of these cases 'went bad' after admission.

The head cases present an interesting group. As a rule they came down unoperated, and were operated upon for removal of foreign bodies, depressed fractures, and hernias. A considerable percentage of them were admitted as walking cases with scalp wounds. The results were most encouraging, considering the long elapsed period since the receipt of the wound, and the liability of cerebral and meningeal infection. It was shown that it was possible even in the presence of a beginning infection of the cortical wound to clean up with Dakin fluid or other antiseptics and subsequently get a closure.

The compound fractures of the femur were treated in the hospital until the spring of 1918, after which no new cases were admitted as another hospital in the area was designated to care for all such fractures. We had treated up to this time about 100 compound fractures of the femur; using traction and suspension in either the Thomas or Hodgen splints, with Carrel-Dakin treatment for the wound. In the wards with these cases were grouped those with infected knee joints - of which there were many, particularly at the time of the great offensive when some of the knee joint wounds came down without being operated and showed beginning infection. Under the care of Capt. Fisher and Maj. Brown there were

until ready for secondary plastic operations.

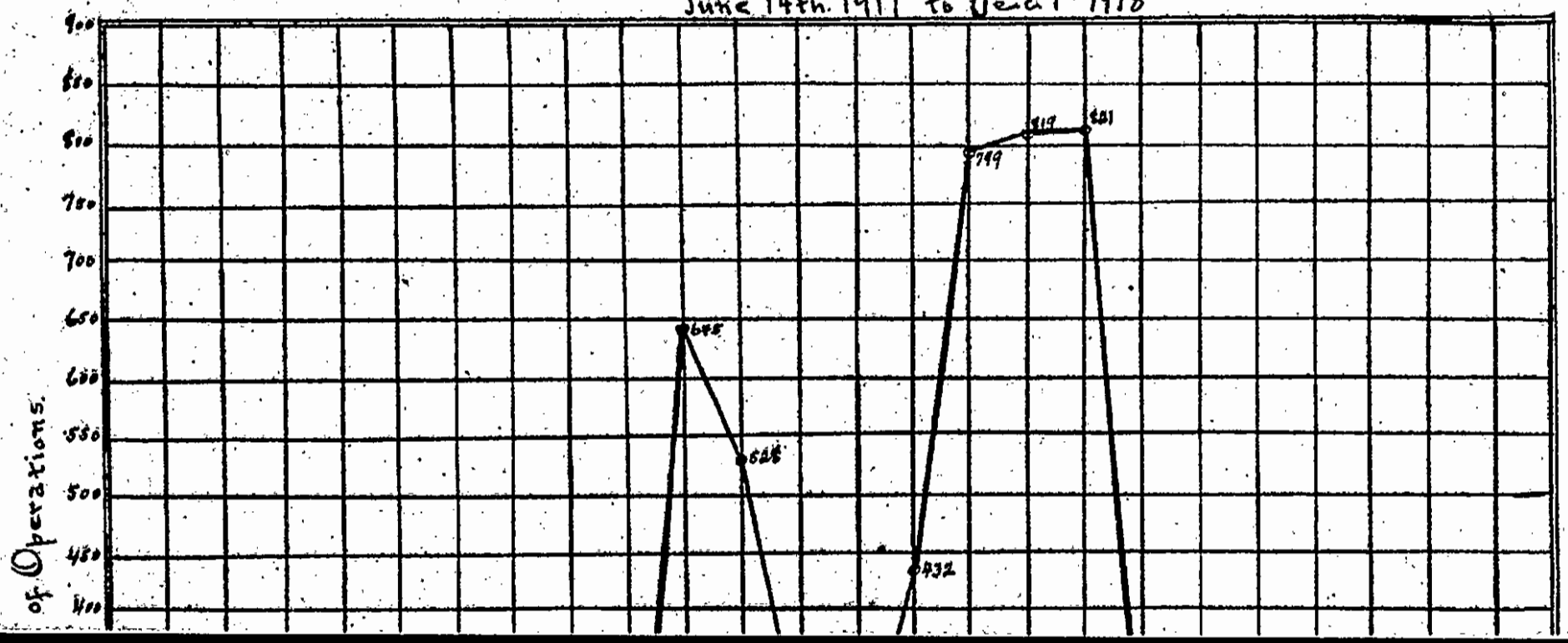
With the exception of the more serious wounded our practice was to evacuate the patients shortly after operating to remove foreign bodies, or to revise wounds to prevent infection of the surrounding tissues, or to relieve infection if it had started. During much of the time infection with gas bacilli was very uncommon; this type of infection being most often found when the cases came down unoperated during cold wet periods. However, in quiet times it was possible to hold our cases long enough to practice delayed primary or secondary suture.

The more serious cases were cared for in wooden huts, the lighter cases in tents. These wards, or rows of tents, were put in charge of medical officers who had special experience or aptitude with these types of wounded. The "walking wounded" were kept apart under the care of most experienced officers and nurses.

The time of admission of new cases was almost always at night. After the bath the patients were allowed to rest until morning unless a hemorrhage was suspected or a high temperature or other untoward symptoms indicated the need of immediate care. It was found that the routine immediate dressing of wounds of cases on admission was a questionable practice, and that most cases needed rest after their long train journey. They were seen in the morning in the wards and arrangements made for operation if the wound demanded. Operations were set for the afternoon unless they were urgent. The operationg room had five tables, and as far as possible the surgeons who had charge of the wards operated on cases under their care. For the first year we used as anesthetists and also as assistants the medical students who had come over as enlisted men. Later when they had been given their diplomas and were junior medical

Chart III

Curve Showing Number of Operations.
from
June 14th. 1917 to Dec 1st 1918



officers they continued to assist and anesthetize. In addition we also had the advantage of the services of nurses as anesthetists, many of whom came to our hospital to take a course in anesthesia as it was designated as one of the training centers of the B.E.F. We found them most valuable aids.

The operating room was cared for by three nurses and three orderlies who had charge of the preparations of instruments, dressings and general supplies. When operating each team had an orderly for its table to prepare the patient and to help throughout the operation. One of the three nurses in the operating room was a "clean nurse", who had the responsibility of distributing sterile instruments and dressings from a large general supply, preparing a table of these for each operator and making additions whenever necessary. She could in this way keep five teams going and no other "sterile" nurses were needed. The second nurse took the instruments after an operation and washed and put them into the sterilizer. The third nurse "circulated", opening up new supplies and giving out such incidentals as were required by various operators. When the operating room was kept running longer than six hours a second shift was used. The operators were the ward surgeons who had training and special aptitude. They had finished their ward work in the morning and reported for duty in the afternoon in the operating room. This arrangement permitted each surgeon to finish up his operative work in a few hours under ordinary circumstances, but when the stress of work made it necessary to run the operating room for twelve hours and sometimes eighteen hours, the shifts were so arranged that the operators alternated on long duties; in one period staying on for twelve hours and the next day taking a short shift of six hours.

The director of the service had supervision of the assignment of cases to the various operators and directed the operator in his work. The arrangement of the building permitted the "storage" of 20 cases before operation. In stress times the cases were brought from the wards, directions written for the X-ray laboratory, which was in the operating pavilion, and after the X-ray report was made the case was turned over to the operator who was advised what to do. By this arrangement it was possible for the director to supervise everything that was done and he was able to develop the younger surgeons who had little experience, so that in time they could act on their own responsibility. The result eventually was that some of the juniors became competent to handle the most serious cases with rare ability and judgment. We feel that this plan had many advantages over that where the chief of the service did all the operating. In our scheme he was available to operate on the most serious cases, but at most times he could direct five tables and accomplish thereby a vast amount of work without having the standard of excellence appreciably reduced. The records show that in one offensive, which gave us the maximum capacity for over ten days, we averaged over sixty operations a day - some days doing as many as eighty-five operations with five teams of mostly junior men - the work being expeditiously and well done. This left the morning free for post operative ward cases and evacuation notes. The records on the field cards were carefully made in the operating room at the time of operation and a record kept in a book of operations.

Medical Service.

(Lt.Col. Walter Fischel)

The medical service was organized according to the outline furnished us for Red Cross Base Hospitals; consisting of an assistant director, in charge of the medical service, and six physicians. After the Unit took over British General Hospital #12 we never held to any set scheme of organization as to the number of doctors on the medical and surgical services. When the admissions were almost all wounded the medical men had to try to be surgeons and when the admissions were mostly medical some of the surgeons had to lower themselves, as they thought, by being just "doctors". Theoretically, our hospital was divided into halves of about six hundred and fifty beds each. On the medical side we tried as far as it was possible to group patients with similar diseases together and to put each group under one physician. We felt that by this means the doctors could more carefully study their cases and therefore the patients would be better treated. At many times, however, the admissions were so numerous and the turnover so rapid that segregation was impossible. Hence all the men who served on the medical service had frequent occasion to handle each and all of the types of medical conditions encountered at our hospital.

During the period during which we had charge roughly 31,000 were admitted as sick. Under the British classification a man was either sick or wounded, but the "sick" man might be a surgical case, as for instance a strangulated hernia or acute appendicitis, and a "wounded" man might have a purely medical condition. Of this class the most numerous examples were the "gassed" cases. So that the figures given are not

absolutely accurate as to the numbers of medical and surgical admissions. Probably the number of medical admissions was larger.

During the twenty months' service we saw nearly all of the types of disease which one usually meets with in a large civilian hospital, including a comparatively small number of the contagious diseases. Most striking was the fact that we had only two cases of enteric fever, both paratyphoid - a testimonial to the efficacy of antityphoid immunization. Also we had no cases of epidemic cerebro-spinal miningitis. In addition we had great numbers of patients who suffered from diseases more or less peculiar to war conditions, and to this war in particular.

Our hospital was the designated center in the Rouen area for neurological cases and we had a great number of the various war neuroses to handle - often as many as 250 to 300 at a time. Fortunately we had on our staff a neurologist of wide experience, Major Sidney I. Schwab. He was taken from our Unit in the early spring of 1918 to take charge of a neurological hospital for the American forces, but his very careful study of this class of patients and his methods of treating them were a great help to all of his colleagues and to our British friends.

In the first nine months of our service the largest and most puzzling group of medical cases was the group generally admitted under the diagnosis P.U.O., which we soon learned meant "pyrexia of unknown origin". It did not take us many weeks to appreciate the propriety of the term. In this group about 40 per cent were probably true trench fever, but it was extremely difficult in nearly all cases to make a really certain diagnosis. Chronic foci of infection about the teeth were almost universal in the British "Tommies", as was also a chronic naso-pharyngitis. In addition a large number of cases of bronchitis was admitted. Pulmonary tuberculosis we found comparatively rare.

During these months various members of our staff worked on the problems of these febrile conditions and accumulated a wide experience of the clinical and laboratory features of trench fever. In the later respect our findings were valuable chiefly in a negative way. Unfortunately our laboratory facilities were most limited so that we could not carry through any extensive research.

We saw comparatively few cases of trench fever in the spring and summer of 1918. This we attributed to two causes - first, the war had become a war of movement and troops no longer spent any time in old trenches, and secondly, the British authorities had learned the value of delousing their troops at frequent intervals.

In the fall of 1918 we had the influenza epidemic. During the months of October and November we treated over 1700 patients with influenza. It was during these months that from a medical standpoint for the first time we really functioned as a "Base Hospital". Our influenza patients were kept until they were either well or dead. Up to that time our hospital had served rather as a clearing station. Patients were moved on as soon as they could be moved with comparative safety.

One of the most urgent problems was the prevention of the spread of the influenza to the surgical wards. By constant watchfulness, immediate isolation of all suspects, and by masking all doctors, nurses, and ward orderlies, we were very successful in protecting our wounded. Of our own staff over seventy were admitted to hospital during this epidemic with only one death. Of the 1700 cases in the hospital we lost 76 - a mortality of under 5 per cent.

A copy of a letter written by the Chief of the Medical service to the Medical Consultant of the Rouen area gives a fresh impression of the epidemic -

Base Hospital #21,
#12(St.Louis USA)General Hospital,
B. E. F., France,
December 3rd, 1918.

My dear Colonel Pasteur:-

You asked for my impressions about the influenza epidemic of the past two months. In going over our books I find that we had about 1700 cases in the two months with a gross mortality of a fraction under 5%. The first half of October we had only a few cases of a mild character. About the middle of October both the number of admissions and the severity of the disease showed sudden and marked increase. The epidemic then stayed at about a level stage for four weeks and began to subside both in numbers and virulence the 10th of November. During the last week of November, however, the number of admissions again rose to the highest of any single week. With this came also a moderate rise in the severity of the cases.

Clinically the following features have struck me especially:

Onset rather acute with extreme malaise during the first 48 hours. During this period there was very often an absence of cough and complete absence of abnormal respiratory symptoms.

In the cases which developed pneumonia there was sometimes a definite chill with hyperpyrexia following, but in the majority of the cases there was no definite symptoms indicating the onset of pneumonia. In the early weeks of the epidemic epistaxis was noted as a frequent symptom. Sometimes the bleeding was severe enough to require packing. In the majority of cases the presence of pneumonia was suspected from the symptoms from one to two days before any definite physical signs could be noted. The earliest signs were pretty constantly a localized suppression of the breath sounds with very fine sticky roles on coughing. Later would come an impaired percussion note. Bronchial breath sounds were often entirely absent and usually late in appearance.

True lobar pneumonia was diagnosed in only three cases, of which two died. In the case of broncho-pneumonia I am sure my figures are not accurate, for I fear that many cases were not properly diagnosed. As accurately as I can judge, the mortality was close to 50%. Among the complications I noticed the comparative rarety of empyema. In our series we had only four cases - all fatal. Even serous effusion was rare. This struck me as the more remarkable because of the fact that in the preceding winter such a large proportion of the broncho-pneumonia we saw did develop sero-fibrinous effusions. As to treatment I am not sure that anything we did was of great benefit. During the early weeks I used sodii salicylate and urotropin in full doses and thought it made the patients more comfortable and hastened the defervescence. Later the same medicine seemed to have no effect. Finally our routine treatment was - rest - open air - water and with the first suspicion of pneumonia we gave digitalis in full doses.

I should have liked to use oxygen more than we could. In a few cases I thought it saved life.

You asked about the influence of travel on the disease. I am quite sure that the trip from the C. C. S. to base had a very bad influence.

We had 240 Local admissions with only two deaths or a mortality of 0.8% as compared to the general mortality of nearly 5%.

I asked Capt. Thomas to give me a summary of the autopsy findings and append a copy. I hope these "impressions" may be of some value to you and regret that because of lack of time I have not been able to render a more complete report.

Very truly yours,

(Signed) Walter Fischel,

Major, M.C., U. S. A.

Summary of Pathological Findings.

During Influenza Epidemic.

Number of Autopsies (Clinically Influenza)
British——————— 54
American——————— 23

Average duration of Disease (40 cases)	13.55 days
Lobular Pneumonia	71 cases
Lobar "	2
Lobar and Lobular	5
Non-purulent Bronchitis	57
Purulent	21
Broncho Pneumonia with abscesses	11
Hemorrhage in Recti Abdom.	9

Bacteriology (50 cases)

Influenza Bac. in Pure Cult.	2	Streptococcus in Pure Cult.	5
" " & Streptococcus	3	" & Staphylococcus	2
" " & Pneumococcus	10	Influenza Bac. & Pul	
" " & Staphylococcus	1	Coccus and M.Catarrhalis	1
" " & Catarrhalis	2	No organism found	4
Pneumococcus in Pure Culture (including Lobar Pneumonia Cases)	11		
Pneumococcus & Streptococcus	5		
" & Staphylococcus	1		
" & Bacillus (variety undertermined)	2		
Micrococcus Catarrhalis Pure Cult.	1		

On every convoy of incoming patients we found between 5 and 6 per cent of the patients were afflicted with a disease of the skin. These patients were isolated in special wards but in most cases were immediately transferred to the special skin hospital of the Rouen area. The most frequent diseases were scabies and impetigo, or, as it was frequently abbreviated, I.C.T. Skin. (Inflammation of Connective Tissue of the Skin).

Finally a very important work fell to the medical service in the wards from penetrating wounds of the chest. After a few weeks it was found advisable to put these cases under the immediate charge of the medical service. During the period of our service over 700 patients were admitted to our hospital with penetrating wounds of the chest. During 1918 practically all these cases were under the personal care of Major Hugh McCulloch. His untiring care and skill made possible the unusually good results obtained at our hospital in the handling of this class of wounds.

The director of the medical service feels that all the men who served under him showed at all times a spirit of cooperation and an enthusiasm which overcame all difficulties. Without this spirit our work could not have been accomplished. Also the cooperation of the other departments was splendid and made of our experience a real pleasure.

Dental Service.

Two dental surgeons were included with the original organization who remained with the Unit throughout. The dental work at Rouen was quite specialized. Routine dental work for patients was carried on in a special building by a group of dentists working for the entire area. Cases of oral surgery were sent as a rule to #5 General Hospital where the treatment of these cases was concentrated. To the dental surgeons attached to Base Hospital #21 was assigned the work for the officers and nursing staff of the area, in addition to the dental work for the Americans.

Toward the latter part of our service all patients with injuries of the jaw were retained at #12 General.

Eye, Ear, Nose and Throat.

The eye work for Rouen area was concentrated in one hospital, consequently there was no particular need for the ophthalmologist belonging to the Unit and he was assigned to general surgery. The nose and throat service under Lt. (Capt.) Proctz and later under Capt. F.J.Biermamp was always very active as catarrhal conditions of the upper respiratory tract were exceedingly common. The laryngologist was of particular value also in the study and treatment of the many cases of shell gas poisoning.

X - Ray.

One of the most thoroughly developed departments of the hospital was the X-ray laboratory. To a certain extent this had been neglected before we arrived. The American apparatus and specialization soon placed the work far in advance of that done in any of the other Rouen hospitals. With us it was customary to X-ray all wounded before operation - a thing that was only possible as a result of the high degree of technical officering of the department. The extent to which we made use of this aid may be realized from the fact that more plates were used at #21 than in all of the other hospitals combined. During ~~the~~ 1918 the work developed to such an extent that a new building was erected to house the equipment.

Unit Life

The entrance of an American unit into an established British Base was the occasion of much social intercourse. Mess dinners for the staff were exchanged and teas and receptions given for the nursing staff. After armistice the French began to take up the thread of social life, which had been given up in 1914, and through the Rouen branch of the 'Foyer Francaise' opened their homes to "The Americans". Several teas and musicales were given and in return Unit #21 combined with Unit #4 in giving a "thé dansant".

Athletics were not as prominent a part of our life as in many units, owing to the lack of competition and the stress of work. The Base Ball team of 1918 was most successful - winning all local games with the Cleveland unit and the Canadians, and making most successful trips to Paris for four games and to Le Havre. On several occasions unit teams took part in interallied meets in Rouen with considerable success.

Both the 4th of July 1917 and 1918 were celebrated - the celebration in 1918 being quite elaborate in which our Allies joined. Sports were held in the afternoon, followed by a dinner to the regional generals of the allied armies, and later a large public meeting at the Municipal theatre which was loaned for the occasion.

As the unit was in a British area practically none of the American entertainments reached us. There were a large number of concert halls and theatres scattered throughout the camp, however, which were open to the Unit personnel. Considerable interest developed in amateur theatricals and a number of "home talent" performances were given. In 1918 a hut was given us by the American Red Cross which was made over by the corps men into a theatre. A number of performances were given here - the most elaborate

being a two act musical comedy "C'est la guerre", produced by the personnel with an original book and music by two of the corps men. Later a minstrel company and a "jazz" orchestra were formed which gave a number of concerts. In June 1918 an open air circus was held.

Each Christmas "unit" parties and special dinners were held. The officers and nurses messes joined in 1917 in giving dinner to several Rouen orphanages, and on Christmas 1918 gave a Christmas party and dinner to the children of a refugee Belgian orphanage whose home behind Mt. Kemmel in Flanders had been destroyed in March 1918.

From time to time visits and inspections were made by higher officers of the American and British Army. Maj. General Sir Arthur Sloggett and Maj. General Burtchell both visited the hospital and Brig. General Carr made a special visit before our departure to say farewell on behalf of the British Medical Service. The Unit was also honored by a visit from Cardinal Du Bois of Rouen. On June 3rd Brig. Gen. Michie of the 27th Division was buried from the hospital; the French, British, and Belgian armies sending both delegations of officers and companies of soldiers, and the President of the Republic of France a special representative.

A number of honors and decorations were received by members of the Unit. Colonels Murphy, Allison and Fife and Miss Stimson received the Distinguished Service Medal from the American Government. Lt. Col. Veeder was made a Companion of the Order of St. Michael and St. George by the British Government. Miss Stimson, Miss Taylor, and Miss Claiborne received the Royal Red Cross, 1st Class, from the British, and Misses Cuppaidge, Serafini, Morton, Anne Carson, Schmidt, and Stephenson the Royal Red Cross, 2nd. Class. Miss Morton received a Croix de Guerre.

Sgts. Capps, Delaney and W. Wright received the Meritorious Service Medal from the British. Major Bell received the Order of Queen Marie from the King of Roumania. In addition a number of individuals were "mentioned" in dispatches and received citations, and "Mobile #4" was cited by the Commanding General of the Second American Army.

The Future.

In accordance with our own wishes and the desire of the War Department, Base Hospital #21 is to be perpetuated. It is planned to have a Base Hospital Association in which every one who has been connected with the Unit will be admitted on an equal basis and rank. In addition an active base hospital organization has been formed, in accordance with plans recently issued by the War Department and the Red Cross, which will be ready to take the field in case of national military emergency or civil disaster. The old hospital equipment is in storage in St. Louis and will be held ready so that a 500 bed hospital can be organized and opened in a few hours. Those of the old staff who so desire will be taken into the new organization and the vacant places filled with younger medical men.

Chart 1

Curve of Admissions by Months.